

EasyTig

Operation Manual

TIG AC/DC Series Inverter Welding Machine

Model: Easytig 200AC/DC Easytig
300AC/DC Easytig 315AC/DC

Hong Kong EasyWeld Limited

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Introduction

The EasyTig series of Welders is a revolutionary new approach to Welding technology. Easyweld introduced a more efficient way to manufacture top quality machines while keeping the cost of operation and repairs lower. This was accomplished using several new approaches to the mainstream technology. One of these methods is our proprietary plug & play main circuit boards which allows ease of repair, reducing the downtime to only hours rather than days, while also reducing repair costs averaging less than \$75! The TIG AC/DC Series uses special safety redundant circuitry with built in auto-protection and self adjusting circuitry to keep your machine running in a safe threshold. This helps protect your machine from over-voltage, power spikes, burn-outs and shorting.

Warranty

The machine is insured against damage upon shipping. If your machine is damaged in any way when you receive it, you must retain all shipping materials and packing. Call our customer service department and report the damage immediately.

There is a 1 year warranty on all internal electronic parts. The torch, power cord, clamps, air regulator, hoses, case & paint and consumables and cables are not covered under warranty. You must use dry gas in your machine and keep it indoors away from rain and moisture.

This machine is designed to operate from 200-240VAC/380VAC at 50-60Hz Only. Operating outside of limits will void warranty.

Warranty coverage covers repair or replacement of damaged machine or damaged circuit board. Warranty does not cover shipping from the customer but does cover return shipping within the Cont. United States. If you are going to return a machine to us for repairs, it must be well packed and insured.

Customers who own machines that require warranty coverage should contact our warranty department by email at info@hkweld.com to obtain a return authorization code.

Customers who own an out-of-warranty machine that require repairs should contact us for an estimate.

WARNING!

You may be faced with dangers during the course of welding, so please be careful and read the manuals carefully before working.

CAUTIONS:

- A certain switch is needed to protect the machine from electricity-leaking.
- Please use welding tools of good quality.
- The workers should be qualified for welding.

Electric-shock: it may be fatal to life.

- Install the earth cable to the standard.
- No touching electric parts with bare hands, wet hands or wet clothes.
- Make sure that you and working piece are in insulation circumstances.
- Make sure that your working is in safety.

Smoke: it may be harmful to your health.

- Keep your head out of the smoke.
- When welding, make sure the air is flowing to avoid breathing in the smoke.

Arc-emission---may be harmful to your eyes and skin

- Wear suitable welding mask and clothes to protect your eyes and skin.
- Use suitable screen or curtain to keep the look-ups from the emission.
- The welding splash may cause fire, so make sure that there are no flammable things nearby the working place.

Noises—too much noise may be harmful to your hearing.

- Please wear something to protect your ears from the noises.
- Warn the look-ups of the hidden harm the noise may cause.
Break-down: ask the professional for help
- If you have any problems in setting up or operating, please first consult this manual.
- If you still can not understand after reading this manual, please contact your supplier or manufacturer to get professionals' help.

A BRIEF INTRODUCTION TO THE PRODUCTS

TIG AC/DC series is our newly-developed products, whose main character is that it can not only weld non-rusty steel, alloy steel and carbon steel and other nonferrous metals with DC function, but also it can weld aluminum and alloy aluminum with AC function. For instance, for welding skateboard and bicycle made of aluminum. The total power exchange rate of the machines is over 85%, and they are energy-saving. The main types are 200 AC/DC, 300 AC/DC and 315 AC/DC.

The use and development of inverter technology in welding benefits from the invention of high power electronic spare parts, esp. IGBT, the employ of which greatly reduces the volume and weight of main parts, e.g. transformer and anti-electricity, thus making our machines able to work under HF 20KHZ. We also employ PWM and CPU-control to make the welding current stable, accurate and easy to adjust; and the machines convenient to operate, and avoid the disturbance of electric magnetism.

AC/DC welders are made with inverter technology, and they are lighter, smarter and more efficient as compared with traditional ones; while compared with imported ones, they are cheaper, and have stronger electric net. The most characteristic one is the use of twice inverter technology and output of pure square wave, which makes the arc straighter, heat more concentrating, anti-clearance stronger and wider clearance, etc to make sure the high quality of the machines.

AC/DC series are equipped with foot switch, thus liberating the workers' hands, and they can adjust the current with their foot freely. As a result, at the very beginning or wire-adding, we can speed up the current; while at the end slow down the current in order to form a good welding line. In a word, the use of foot switch helps raise the welding efficiency and reduces the welding difficulty as well as make sure of the welding quality. If you need pulse welding, we have foot-control switch with the function of pulse welding.

Inverter welders are also equipped with TIG torch, and cable of suitable length, hose and water-cooling connector. Besides, there are also other spare parts for torch, such as ceramic nozzle, collet body, short cap and long cap. The size and quantity of them can see in the enclosed packing list. If you need more spare parts, you can order separately

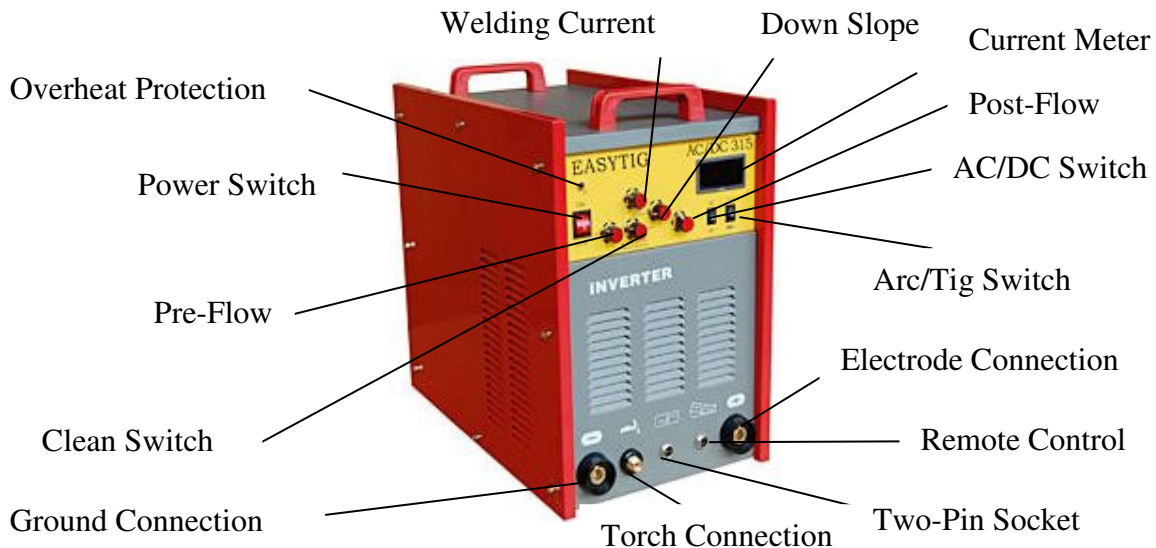
Cautions!

This equipment is used mainly in technology. Under room temperature, this equipment may have wireless emission, please pay attention to it when working.

THE MAIN PARAMETER

TYPE	TIG 200AC/DC	TIG 300AC/DC	TIG 315AC/DC
Power voltage	AC220V±15% 50/60HZ	AC380V±15% 50/60Hz	
Rated input current	20A	19A	19A
Power capacitance	4.5 KVA	8.5KVA	8.9KVA
Rated output current	200A	300A	315A
Range of output current	20~200A	20~300A	20~315A
Arc force (A)	0~100	0~100	0~100
No-load voltage	56V	45V	45V
Working voltage	18V	23V	23V
Pre-flow (S)	0-2	0-2	0-2
AC output frequency(Hz)	60	60	60
Clean width (%)	20-80	20-80	20-80
Slope-downtime (S)	0-5	0-5	0-5
Tail-gas time (S)	2-10	2-10	2-10
Air-occupy proportion (%)	10-90	10-90	10-90
Remote control	Yes	Yes	yes
Arc-leading	HF vibration	HF vibration	HF vibration
Efficiency (%)	85	85	85
Rated duty cycle (%)	60	60	60
Power factor	0.93	0.93	0.93
Insulation class	B	B	B
Protection class	IP21	IP21	IP21
Weight (kg)	32	38	38
Size (mm)	562X465X467	562X465X467	562X465X467
Max welding thickness (mm)	10	14	15

Panel board functions & instructions



A. Exchange switch:

1. ARC/TIG exchange switch:

Place the switch on "ARC"; it's for MMA welding;

Place the switch on "TIG", it's for AC or DC Tig welding.

2. AC/DC Exchange switch:

Place the switch on "AC"; it's in AC mode for welding aluminum;

Place the switch on "DC"; it's in DC mode for welding non-rusty steel.

3. 2T/4T switch (Optional):

Place the switch on "2T", its short welding. that's, when you press the button, there is current output, and when press it again, it stops; as for "4T", when you first press it, there is current out, and press it again, there is still current out; press the third time, the current output stops. So it's called long welding.

4. DC/PULSE (Optional):

When the switch is at DC TIG, press it at PULSE, and there is DC pulse current out.

B. Adjustment switch:

1. Pre-flow time switch:

To guarantee the welding efficiency, gas is before current, this switch is to adjust the time between gas and current.

2. Current time switch:

It's for current adjustment, and changes the volume of the current.

3. Clear width switch:

In AC TIG welding, the current exchanges between positive and negative directions, when Current is from tungsten to work piece, its positive direction and tungsten heats little, convenient for welding; while if current is from work piece to tungsten, it's negative and good for removing the oxidization coating on the surface of the work piece, but the tungsten may be easily damaged because of overheat. This switch is for adjusting the current time between positive and negative. When it's at the middle ,the proportion is 50% ;at the maximum is 80%; at the minimum ,20%.If in clockwise direction, the positive current time turns longer and negative one shorter; and vice versa.

Re: Big current, low clear width; e.g. >200A, the clear width <30%.

Little current, high clear width; e.g. <100A, the clear width >50%.

4. Slope-down switch:

After finishing welding, at the crater time, the current is required to reduce gradually until it stops, and this switch is to adjust the reducing time.

Re: If use "foot switch", this switch is adjusted to "0" in counterclockwise direction.

5. Post-flow time switch:

The work piece may be oxidized because of heat, so it needs to cool with the welding gas for some time as long as b 0 seconds, this switch is for adjusting the post-flow time.

6. Arc force adjustment:

If you adjust this switch at MMA, then it can change the welding characteristic of the little current.

7. Base current:

At DC TIG pulse, this button can adjust the volume of the valley current.

8. Pulse frequency switch:

At DC TIG, and place the DC/PULSE at PULSE, this switch can adjust the pulse frequency (0.5-300HZ).

9. Air-occupying proportion:

Change the air-occupying proportion at DCTIG pulse.

C. Pilot light function:

Pilot light for over-heat protection:

If the machine works continuously for long time under big current, its inner parts may get burned as a result of over-heat. To avoid this, we set the pilot light, when it's on, please stop working, but do not turn off the machine, and it can recover after 2 or 3 mm.

INSTALLATION

TIG welders are equipped with power voltage complement and when the power voltage ranges between $\pm 15\%$, it can still work.

When using long output cable, to reduce voltage-decreasing, we suggest you choose cables with wider section; but if the cable is too long, it may cause abnormal in the working system, so we recommend you use the given length.

1. Make sure the ventilating mouth is not blocked or covered lest the cooling system invalid.
2. Connect well the CO₂ source. The gas supply includes gas bottle, gas hose and gas regulator, the connection of the hose should be connected with hose clamp or other things lest gas-leaking or air-in.
3. Connect the case to earth with cables whose section is no less than 6mm², from the back of the welding machine to earth screw to earth-connecting equipment.
4. Plug the air-plug of the back circuit cable to on the air-socket "+" and whirl the switch in clockwise direction tightly; the other terminal of the earth clamp is tied to the work piece.
5. Tie the power plug to the concerned socket, and make sure that the power supply is AC 380V with a tolerance error of the given range.
6. Set up the water-cooling torch according to the given map, tie the copper screw at one end of the torch to the one-knob on the panel

board, and tighten it in clockwise direction.

7. Connect the two-cored air plug of the foot switch respectively to the two-cored and three-cored sockets on the panel board.

After finishing all the work above, you can start welding.

OPERATION

1. Turn on the power switch, the fan begins to work.
2. Turn on the gas switch; adjust the gas to rated standard. (See parameter)
3. According to the oxidization degree of the work piece, adjust the switch for clean width to change the positive and negative current rate.
4. Turn on the switch on the welding torch, and the electromagnetic valve works; you will hear the sound of HF electricity-releasing. Meanwhile, there is gas coming out of the torch mouth. Attention: If it's the first time to weld, please hold the switch for seconds before welding; don't begin welding until all the air in the gas road is made out. After you finish welding, there will be still being gas out for seconds. This is designed for protecting the welding point, so please stay in the welding place for seconds before removing the torch.
5. According to practical use, choose the foot switch. If the foot switch is in use, please turn the current to the minimum, and the current volume is under the control of the foot switch.
6. According to practical use, adjust the time of "pre-flow", "post-flow" and "slope-down".
7. Keep the distance between the tungsten and work piece between 2mm to 4mm, push the torch switch, then HF electricity-releasing will come out between the welding tungsten and work piece; after the arc-leading, the splash may disappear at once, then you can start work.

INSTRUCTIONS TO DC TIG:

1. Make "AC/DC" to "DC" place.
2. PULSE/DC switch, if you put it at PULSE, you can adjust the buttons for Base current adjustment. Set pulse adjustment or clear width adjustment to achieve the welding efficiency that you need.
3. Turn on the power switch, the fan inside the machine begin to work.
4. Turn on the gas switch; adjust the gas to rated standard. (See parameter)
4. Same as ACTIG welding instructions 5. 6. 7. 8.

CAUTIONS

Any plug-in or plug-out of cable or connection during the welding is forbidden, because such operation may cause harm to either body safety or the equipment.

Cautions & Pre-cautions

Environment

- 1) The operation should be in a comparative dry environment, the air humidity no more than 90%.
- 2) The around temperature should be between -10°C and 40°C.
- 3) Avoid working under the sun or in the rain, do not let in water or rain.
- 4) Avoid working under the circumstance of dust or air with corrosive gas.
- 5) Avoid doing CO₂ working under the condition of strong air flow.

Safety tips

TIG welders are equipped with over-voltage and over-current and over-thermal protection circuit, when the output voltage, output current and inner temperature is over the rated ones, the machine will stop working automatically. But over-use (e.g. over-voltage) may damage the welding machine, so pay attention to the following tips:

1) Make sure of good ventilation

TIG welders are large technical welding machines. It has huge current through it when working, and natural air flow can not satisfy its cooling need, so we put two embodied fans to cool it and makes it work normally. The operator should make sure the fan not blocked or covered, and the distance between the welder and surroundings shouldn't be less than 0.3m. The users should always pay attention to the flowing condition of the machine, because it is very important for the working quality and working year of the machine.

2) No over-load!

The users should pay second attention to the allowed max loading current (comparative load cycle), and make sure the welding current not surpass the allowed max. Over-current may obviously shorten the working year of the machine, and even may fire the machine to pieces.

3) No over-voltage!

The power voltage is listed in the "Main Parameter" table; generally, the automatic compensating circuit may make sure the current is in rated range. If the voltage surpasses the allowed value, the machine may be damaged. The operator should be familiar with it and take certain actions to prevent it.

- 4) Every welder has an earth screw, and earth connecting mark. Please choose a cable whose section is more than 6mm^2 before operation and make the case firm earth —connecting to avoid accidents which may be caused by electricity-leaking.
- 5) If the working time of the welder surpasses the standard load cycle, the machine may suddenly enter protection condition and stop working, which shows that the machine has been over the standard load cycle, and over-heating works the thermal —control switch, thus making the machine stop working. Meanwhile, the red pilot light on the panel board is on. Under this circumstance, you needn't pull off the plug, so that the fan can continue working, thus cooling the machine. When the red light is off, the temperature decreases to the standard range, then you begin to weld again.

MAITENANCE

WARNING: All maintenance and checking work should be carded out under the circumstance of light off .Make sure the power plug is pulled off before you open the case.

- 1) Use clear and dry compressed air to remove the dust in certain period, if the machine is working under heavy-polluted environment, clear it daily.
- 2) The pressure of the compressed air should be in a suitable level lest it damages the little parts in the machine.
- 3) Check the inner circuit connection in the welding machine, and make sure the connections are right and firm (esp. plug-in or parts) ; if there is rust or loose, use the sand-paper to rub off the rust or oxidized coating and re-connect it firmly.
- 4) Avoid water or water gas into the inner of the machine, if happens, please first dry it, and then measure the insulation situation with Omen meter. (Including the joints and joint vs. case) .Do not continues until you make sure there is no abnormal phenomenon.
- 5) If the machine is not used for long time, please put it into the original box and keep it in dry condition.

PRE-CHECKING

WARNING

Blind experiment and incautious checking may cause trouble for formal repair and make the breakdown area bigger. And the inner bare parts of the machine have voltage that may cause dangers if it has power supply, so any direct or indirect touch may cause accidents of electric shock, and heavy shock may even cause death!

Caution: During the maintenance period, if not authorized, any personal wrong repair to the welders may cause the maintenance invalid.

Checking breakdown

Cautions: The operators are supposed to have enough knowledge of electric-gas and common sense of safety, and concerning certificates are needed. We suggest you contact us before operation and meanwhile get permission.

BREAKDOWN	POSSIBLE CAUSES	SOLUTION
1.No reflection after turn-on	1. No power supply or short of phase 2. Power cable in break circuit 3. Assistant power off in the phase	1. Check the power supply. 2. Open the case to check the voltage 3. Contact the supplier or specialist.
2. The regulator indicates no sound of releasing electricity, no show of breakdown.	1. Something wrong with the switch 2. Releasing nozzle in short circuit 3. Air-socket wrongly set up	1. Use screw knife to make the two- cored air socket short circuit. 2. Adjust the distance between electric-releasing nozzles. 3. When using torch or foot switch, the concerned plug should be in the two-cored socket.
3. Have HF electricity-releasing, but no current output.	1. Earth cable not well connected 2. Torch cable in short circuit.	1. Check the earth cable. 2. Check or renew the torch.
4. Have current output, but cannot adjust,	1. Hand-control and foot switch in wrong place. 2. Potentiometer in the foot switch broken.	1. When using foot switch, the exchange switch should be in "on" place. 2. Renew the potentiometer.
5. Hand-control normal, while foot switch abnormal.	1. Slight switch in foot switch broken. 2. Sliding potentiometer in the foot switch broken.	1. Renew the slight switch. 2. Renew 1K sliding potentiometer.
6. Abnormal pilot light on	1. Spontaneous over-current protection. 2. Too much dust causes short circuit. 3. Some parts in the machine broken.	1. Turn off the machine, and restart after the light on. 2. Open the case; use the compressed air to clear the dust. 3. Contact professionals or suppliers.
7. Can not remove the oxidized coating in AL-welding	1. Choose the wrong welding button. 2. Clear width too low. 3. Damage the MOSFET in second inverter.	1. Choose AC button in AL welding. 2. Make clear width high or remove the oxidized coating. 3. Contact professional.
8. Current normal, but no gas out	1. Have sound of electromagnetic valve a. Gas nozzle blocked up b. gas hose broken 2. No sound of electromagnetic valve a. Valve damaged b. Valve-controlled circuit in trouble	a. Clear the blockings. b. Repair and change Tig torch a. Change the valve. b. Ask professional to repair the board.
9. Tungsten terribly damaged	Clear width adjust too much	Adjust the clear width in counterclockwise
10.Earth cable too hot	Earth cable not well connected	Better tie the cable screw to the work table

If you still can not solve the problem after consulting the above table, then please contact the sales agency or concerning department.